KNIGHT FLYBACK CKR

FLYBACK CHECKER

ASSEMBLY MANUAL

A PRODUCT OF ALLIED RADIO · CHICAGO

knight-kit®

SPECIFICATIONS

SHORTED TURNS TEST	Positive indication of shorted turns for any coil with a Q greater than 1, and an inductance between .003 henry and 2 henries.
CONTINUITY TEST	Checks continuity of any circuit with a resistance between zero ohm and .5 megohm.
INDICATOR	4" meter with a 400 μa movement.
TUBE COMPLEMENT	6S4A in a pulsed oscillator circuit.
POWER SUPPLY	Isolation transformer type.
CASE DIMENSIONS	7¾" x 5⅝" x 5".
POWER SOURCE	105 to 120 VAC; 5 watts.
NET WEIGHT	4¾ lbs.

INTRODUCTION

This instrument is engineered to permit TV technicians to judge the condition of flyback transformers and deflection yokes. Any coil, for example TV width or linearity coils, with a Q of 1 or more and an inductance between .003 henry and 2 henries, can be checked for shorted turns. The continuity of any circuit between zero ohms and .5 megohms can be checked.

HOW TO BUILD THE FLYBACK CHECKER

Before starting to build this unit, check each part with the parts list on page 13. If you cannot identify some of the parts by sight, locate them on the pictorial diagrams. Capacitor and resistor values, if not printed on the part, can be found by using the color code chart.

The only tools necessary for building the Flyback Checker are: A pair of long nose pliers, a medium size screwdriver, and a soldering iron. A pair of diagonal cutters and a small screwdriver for setscrews are convenient to have. A good set of tools is shown at the end of the Parts List.

Study the pictorial diagrams, and note how the parts are mounted. These pictorial diagrams show the actual location of all parts and wiring. The schematic diagram shows how the parts are connected electrically and is helpful in understanding how the circuits function.

The step-by-step instructions are the best and fastest way of assembling this unit. We suggest that you check off each step in the box ☐ after you have finished it. Some builders also put a pencil mark on the wiring views along the wires and parts that they have just installed. Both of these methods are good and will assure quick and accurate wiring.

WIRING AND SOLDERING

How well a piece of electronic equipment works often depends on the quality of workmanship used in its construction. It is for this reason that the following suggestions are made. These hints are mainly for the beginner. However, even experienced persons may benefit from a brief review.

The insulated wire furnished with this kit is cut to length and the ends are stripped to save you time and trouble. Each different colored wire is a different length, therefore, be sure to use the color specified in each of the wiring steps.

A piece of bare wire is included. Whenever it is necessary to use some of it, the exact length of the piece required is given.

The proper way to connect a wire or lead to a solder terminal is shown in Figure 1. To insure a good mechanical connection, squeeze the wire around the terminal with your long nose pliers after it has been hooked on.

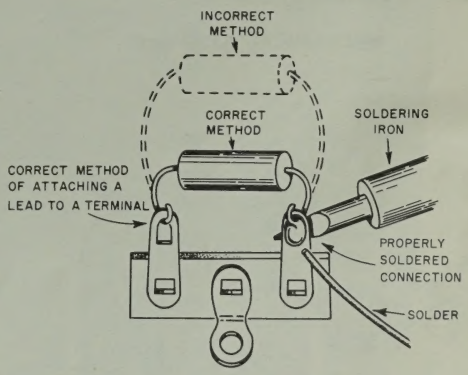


FIGURE 1. WIRING AND SOLDERING

Unless otherwise stated, all the leads on the resistors, capacitors, and transformer should be as short as possible. Figure 1 illustrates the best way to connect a component. As shown, the end leads should be pulled through the terminals so that the parts are tightly mounted. After a lead is pulled through a terminal, bend it around the terminal and cut off the excess wire.

Study the enclosed "How to Solder" booklet.

USE ONLY ROSIN CORE SOLDER

USE THE ROSIN CORE SOLDER SUPPLIED IN THE KIT. KITS WIRED WITH ACID CORE SOLDER OR ACID FLUX WILL CORRODE AND WILL NOT WORK LONG. SUCH KITS ARE NOT ELIGIBLE FOR REPAIR OR SERVICE.

Before soldering, the tip of your soldering iron must be properly tinned. To do this, clean the surfaces of the tip with steel wool, or a fine file, until the bright copper surface is exposed. Plug the iron in and allow it to heat until it melts solder. Apply solder to the tip until it is

well covered with a thin coat. Wipe off the excess solder with a rag. The tip should now be "shiny". Re-tin the tip whenever it becomes covered with a layer of scale (flakes of gray matter).

Before soldering a connection, be sure the iron is hot enough to melt solder. Preheat the CONNECTION by holding the tip of the iron against the point to be soldered. After the point is heated, apply solder between the connection and the iron tip. Use only enough solder to fill the crevices and cover all of the wires and the terminal. Do not solder any connection until all wires have been connected to it. Refer to figure 1 again.

Do not disturb a soldered connection until the solder has hardened. If the connection is disturbed, you will have what is known as a "cold solder connection". Cold solder connections are not good electrical connections. If you should accidentally disturb a connection and it cools with a dull, frosty appearance, re-heat the connection and add a small amount of solder to it.

When wiring the contacts of the switch, be careful not to bend the switch contacts which will reduce the spring pressure of the contacts. If the flux runs out around the contacts, it will cause a leakage path.

MECHANICAL ASSEMBLY

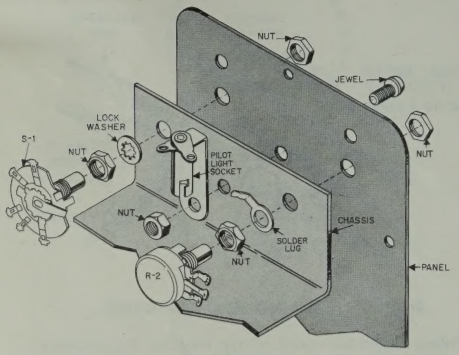


FIGURE 2. FASTENING THE CHASSIS TO THE PANEL

SEE FIGURES 2, 3, 4, AND 5.

☐ Fasten the chassis and front panel together by mounting R-2, the CALIBRATE control, and the switch, S-1, through the holes in the chassis and panel. See Figure 2 for the nuts and washers used in this step.

☐ Temporarily place a knob on the shaft of S-1. Tighten the knob setscrew on the flat side of the shaft. Rotate the knob and check the alignment of the white line on the knob with the marks on the panel. If these marks do not match, loosen a switch mounting nut, and turn the switch until the alignment is correct. Tighten the switch mounting nut securely.

☐ As shown in Figure 2, insert the pilot light jewel in the front panel. Inside the chassis, place the pilot light bracket over the jewel bushing, and fasten it with a medium size nut.

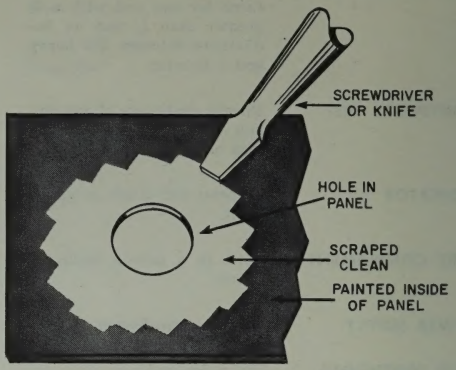


FIGURE 3. HOW TO SCRAPE PAINT

☐ On the rear of the front panel, around the hole marked GROUND, scrape off the paint as shown in Figure 3.

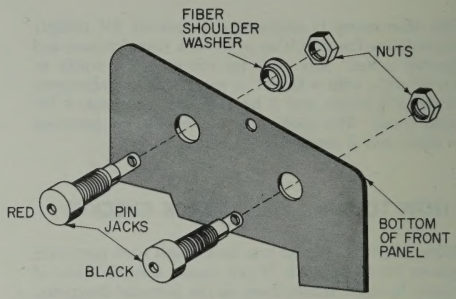


FIGURE 4. HOW TO MOUNT THE PIN JACKS

☐ Mount a black pin jack through the hole marked GROUND on the front panel. As shown in Figure 4, fasten this jack with a medium size nut on the back of the front panel.

☐ Mount a red pin jack in the hole marked OUTPUT on the front panel. As shown in Figure 4, use a fiber shoulder washer to insulate the jack from the front panel.

☐ Push the five grommets, 1 large, 2 medium, and 2 small, into the holes as shown in Figure 5.

☐ Mount TS-2, a two-terminal strip, near the rear of the chassis, as shown, with a screw and nut.

☐ Mount the 9-pin socket for V-1, inside the chassis,

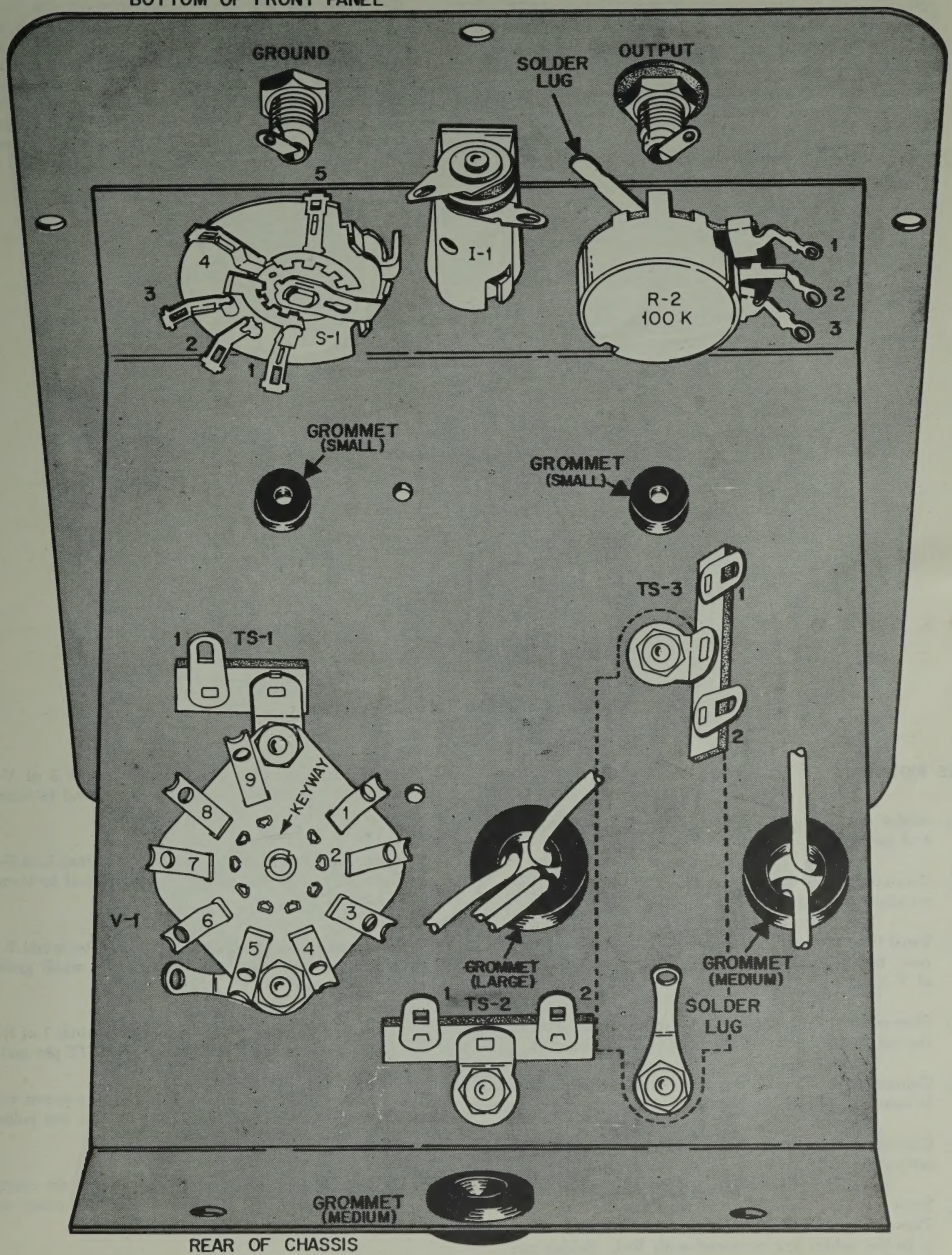


FIGURE 5. MOUNTING PARTS ON THE CHASSIS

with the keyway (wide open space between two pins) in the position shown. Mount TS-1, a single terminal strip between the socket V-1 and the chassis with the mounting screw and nut nearest the front panel. Mount a solder lug between socket V-1 and the chassis with the mounting screw and nut nearest the rear of the chassis.

☐ T-1 is the large transformer with two leads on one side, and four leads on the other side.

☐ From the top of the chassis, push the four leads of T-1 (two red and two green) through the large grommet. Push the two black leads through the medium size grommet. Put a screw through the mounting tab nearest the front panel and through the chassis. On the inside of the chassis, mount TS-3, a two-terminal strip, on this screw and fasten it with a nut. Put a screw through the other mounting tab and fasten a solder lug inside the chassis with a nut. Figure 9 shows the position of T-1 on top of the chassis.

WIRING INSIDE THE CHASSIS

SEE FIGURE 6.

☐ Solder one of the black leads from T-1 to terminal 4 of switch S-1.

☐ Connect, but do not solder, the other black lead to terminal 1 of TS-2.

☐ Twist the two green leads from T-1, as shown. Connect, but do not solder, either green lead to pin 4 of V-1.

☐ Connect, but do not solder, the other green lead to the solder lug fastened by the V-1 mounting nut.

☐ Connect, but do not solder, either red lead from T-1 to terminal 2 of TS-3.

☐ Connect, but do not solder, the other red lead to the solder lug fastened by the V-1 mounting nut.

☐ Solder a 1½" piece of bare wire to pin 2 of V-1. Pass the other end through pin 5 of V-1, and solder it to the solder lug mounted with V-1. Solder pin 5 of V-1.

☐ Solder one end of a blue wire to pin 4 of V-1. Solder the other end to terminal 2 of I-1.

☐ Solder one end of a yellow wire to pin 3 of V-1. Connect, but do not solder, the other end to terminal 2 of S-1.

☐ Solder one end of a blue wire to terminal 5 of S-1. Connect, but do not solder, the other end to terminal 2 of TS-2.

☐ Solder one end of an orange wire to terminal 2 of S-1. Push the other end through the small grommet, as shown.

☐ Solder one end of a yellow wire to terminal 1 of S-1. Solder the other end to the red OUTPUT pin jack.

☐ Connect, but do not solder, one end of a green wire to terminal 3 of S-1. Connect, but do not solder, the other end to terminal 3 of R-2.

☐ Connect, but do not solder, one end of an orange wire to terminal 1 of TS-3. Push the other end through the small grommet, as shown.

☐ Solder the lead from the striped end of C-1, a .1 μfd capacitor, to the solder lug fastened by the T-1 mounting nut. Connect, but do not solder, the other lead to terminal 2 of TS-3.

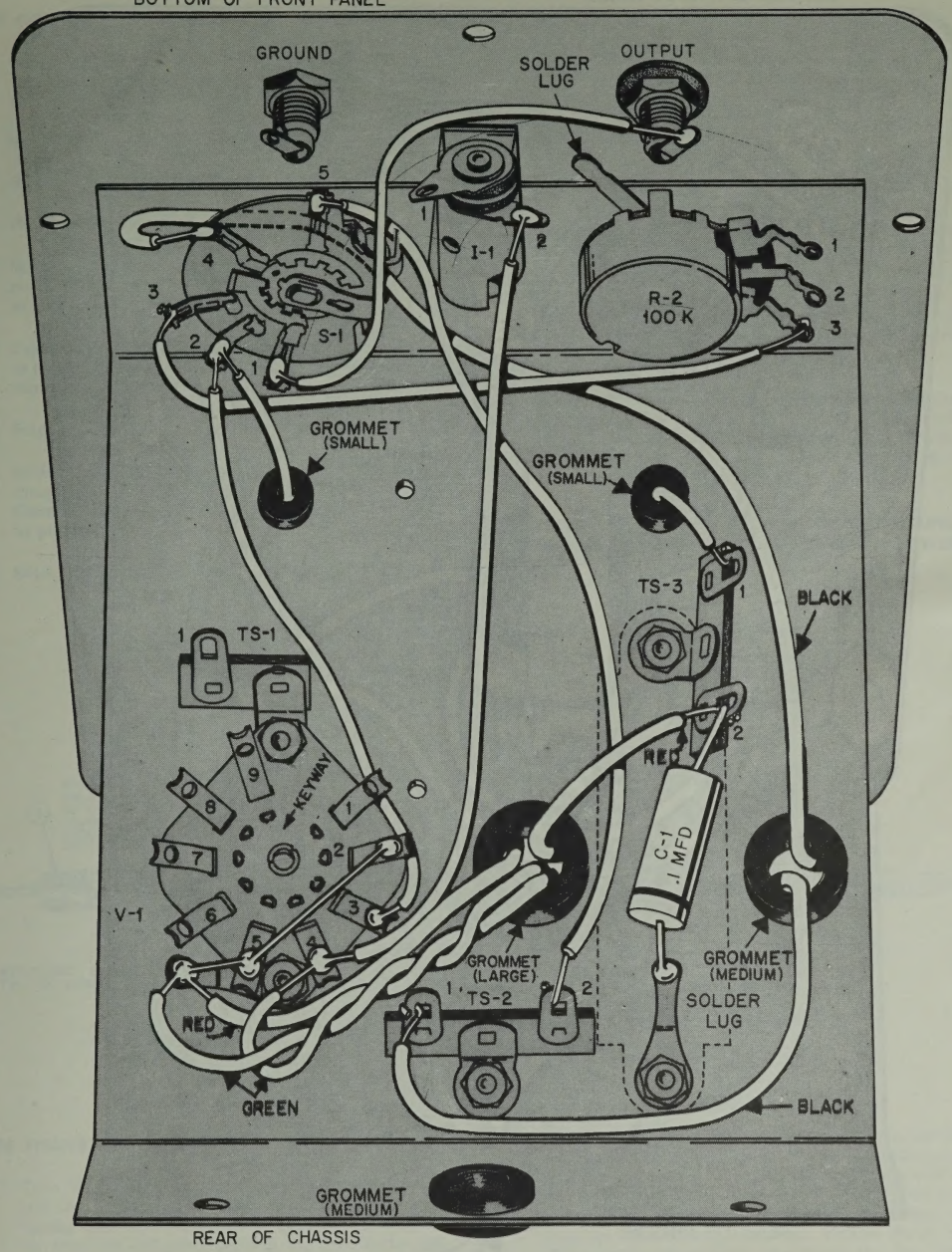


FIGURE 6. FIRST WIRING VIEW

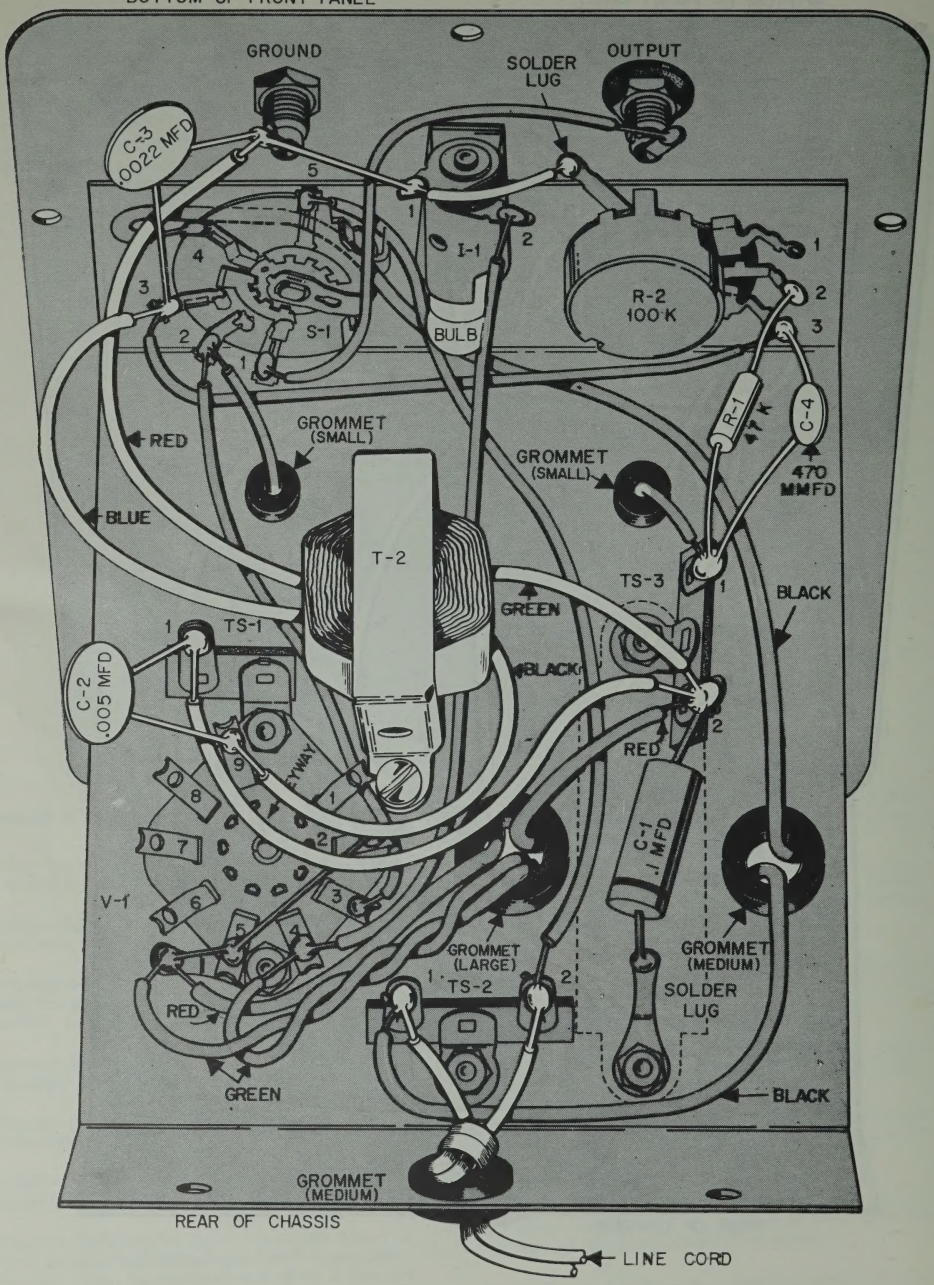


FIGURE 7. FINAL WIRING VIEW

SEE FIGURE 7.

☐ Solder one lead of C-4, a 470 $\mu\mu$fd (.00047) disc capacitor to terminal 3 of R-2. Connect, but do not solder, the other lead to terminal 1 of TS-3.

☐ Solder one lead of R-1, a 47KΩ resistor (with color stripes yellow, violet, orange) to terminal 1 of TS-3. Solder the other lead to terminal 2 of R-2.

☐ Put the pilot light bulb into socket I-1.

☐ Mount T-2, inside the chassis, with the colored leads positioned as shown. Use two screws and nuts to mount T-2.

☐ Connect, but do not solder, one end of a yellow wire to terminal 2 of TS-3. Connect, but do not solder, the other end to terminal 1 of TS-1.

☐ Solder the green lead from T-2 to terminal 2 of TS-3.

☐ Solder one lead of C-2, a .005 μfd disc capacitor (may be marked 5000 or 5K), to terminal 1 of TS-1. Connect, but do not solder, the other lead of C-2 to pin 9 of V-1.

☐ Solder the black lead from T-2 to pin 9 of V-1.

☐ Connect, but do not solder, one lead of C-3, a .0022 μfd disc capacitor (2200 or 2.2K), to terminal 3 of S-1. Connect, but do not solder, the other lead of C-3 to the GROUND pin jack.

☐ Connect, but do not solder, the red lead from T-2 to the GROUND pin jack.

☐ Solder the blue lead from T-2 to terminal 3 of S-1.

☐ Solder one end of a 1¼" bare wire to the GROUND pin jack. Connect, but do not solder, the other end to terminal 1 of I-1.

☐ Solder one end of a red wire to terminal 1 of I-1. Solder the other end to the solder lug fastened under the R-2 mounting nut.

☐ Put the bare end leads of the line cord through the grommet at the rear of the chassis. Tie a knot in the cord about 3" from the end inside the chassis. Solder one line cord lead to terminal 1 of TS-2. Solder the other lead to terminal 2 of TS-2.

CAUTION: DO NOT TOUCH ANY OF THE WIRING WHILE THIS INSTRUMENT IS PLUGGED INTO A POWER OUTLET.

TEST LEAD ASSEMBLY

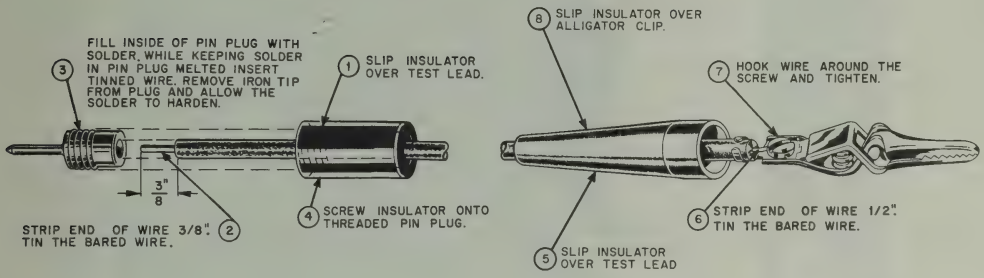


FIGURE 8. TEST LEAD ASSEMBLY

SEE FIGURE 8.

☐ Trim ⅜" of the insulation from one end of the red test lead. Twist the strands of wires together and lightly coat them with solder. Unscrew the insulator from the red pin plug. Fill the hole in the pin plug with hot solder, and insert the bare end of the test lead into the hole. Let the solder cool.

☐ Pass the red pin plug insulator over the bare end of the red test lead and screw it back on the plug.

☐ Trim ½" of the insulation from the other end of the red test lead. Twist the strands of wire together and lightly coat them with solder. Push the bare end of the lead through the small hole end of the red clip insulator. Loosen the screw on an alligator clip and hook the wire around this screw. Tighten the screw down on the wire hook, and crimp the two tabs down on the wire insulation. Slide the clip insulator over the clip.

☐ Assemble the black test lead in the same way.

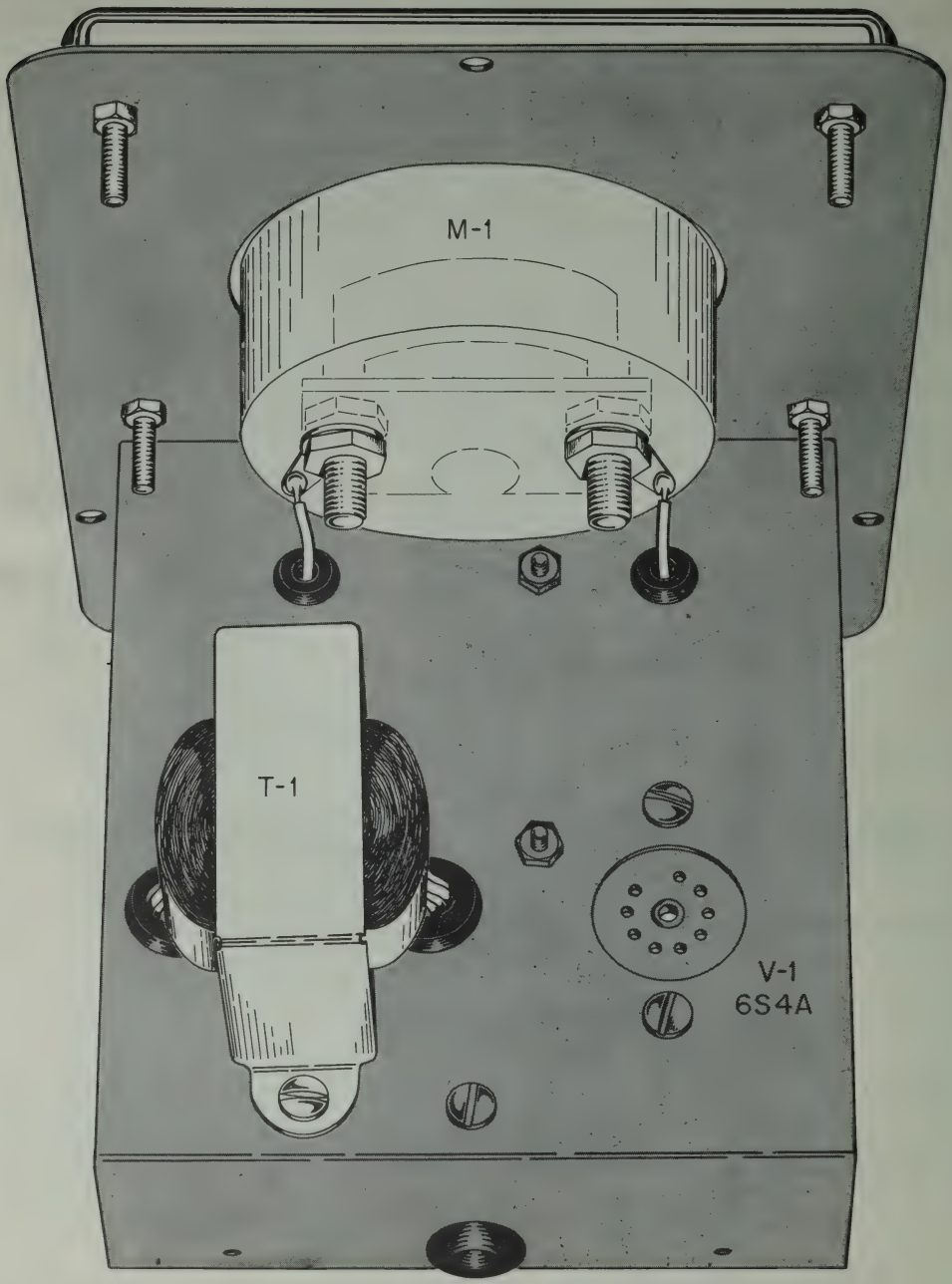


FIGURE 9. TOP OF CHASSIS VIEW

FINAL WIRING

SEE FIGURE 9.

☐ Mount the meter, M-1, as shown. Use the four nuts supplied to fasten the meter to the front panel.

☐ Solder the two orange wires coming through the small grommets to the respective closest solder lug on the meter.

The wiring of your Flyback Checker is completed. Check all of the work. A few minutes spent in careful checking can save hours of trouble shooting later.

☐ Install the two knobs.

CHECKING THE OPERATION

☐ Put V-1, the 6S4A tube, into its socket.

☐ Turn the left knob to OFF.

☐ Set the CALIBRATE knob to approximately the middle of its range.

☐ Plug the line cord into a 110-120 V 60 cps AC power outlet.

CAUTION: DO NOT TOUCH ANY OF THE WIRING WHILE THIS INSTRUMENT IS PLUGGED INTO A POWER OUTLET.

☐ Turn the left knob to SHORTED TURNS. After about a minute warm-up, the meter needle will move to the right.

☐ Set the meter needle to the CALIBRATE line on the dial by turning the CALIBRATE knob.

If the meter needle does not respond as indicated in the two previous steps, refer to the paragraphs under SERVICE HINTS.

☐ Turn the Flyback Checker "OFF".

☐ Plug the red test lead into the OUTPUT jack and the black test lead into the GROUND jack. Avoid touching any wire connected to the "output" jack. A 500 volt pulsed waveform appears across the "output" and "ground" jacks.

☐ Plug the line cord into a power outlet and turn the left knob to SHORTED TURNS. Allow a minute for the unit to warm up. Short the test leads together. The meter needle should move all the way to the left.

☐ Turn the switch to CONTINUITY and short the test leads together. The meter needle should move all the way to the left.

If the above operation check gives the correct results, proceed with the FINAL ASSEMBLY INSTRUCTIONS. If the unit does not operate properly — refer to the SERVICE HINTS.

FINAL ASSEMBLY

☐ Push a handle mounting stud through each hole in the ends of the handle. Put a stud through the hole in the side of the cabinet. Use a lockwasher, and one of the hex nuts to fasten the stud inside the cabinet.

☐ Fasten the other stud in the same way.

☐ Push the line cord through the hole in the rear of the cabinet from the front.

☐ Place the completed chassis in the cabinet and fasten it with two medium size self-tapping screws through the rear of the cabinet.

☐ Fasten the front panel to the cabinet with the four small self-tapping screws.

☐ With the unit standing upright check the position of the meter needle. If it is not on zero, adjust it to zero with the screw at the bottom of the meter front.

CHECKING FLYBACK TRANSFORMERS

1. Plug the Flyback Checker into a power outlet.
2. Insert the two test-lead pin plugs in the jacks on the front panel. (Do not allow the alligator clips to become shorted.)
3. Disconnect the suspected TV set from the power outlet.
4. Remove the high voltage rectifier tube. (1B3, 1X2, etc.)
5. Unsolder all leads from the horizontal output transformer, except the plate cap leads to the horizontal output and the high voltage rectifier tube.
6. With the Flyback Checker warmed up, adjust the CALIBRATE knob to position the meter needle on the CALIBRATE line.
7. Check each winding separately for CONTINUITY and SHORTED TURNS.

"CONTINUITY" SWITCH POSITION

Connect the test leads to the two terminals of the winding to be checked and observe the reaction of the meter needle. If the meter needle swings to the far left in the green, CONTINUITY OK region, the winding is not open. If the meter does not deflect from the CALIBRATION line, the winding is open. The portion of the scale between 0 and 20 covers from 0 to 50 KΩ. Coils that are not open or without excessive resistance should read well down in this portion of the scale.

"SHORTED TURNS" SWITCH POSITION

To check for shorted turns, connect the test leads to the two terminals of the winding and observe the meter needle. If the needle swings far to the right in the green, GOOD region, there are no shorted turns in that winding. If the needle swings to the left in the red, SHORTED TURNS region, that winding should be suspected of having shorted turns.

INTERPRETING READINGS

The CONTINUITY test is quite positive in its action, and all readings may be taken at face value. The SHORTED TURNS readings may be misunderstood, however. For example, if the high voltage rectifier is plugged into its socket while a SHORTED TURNS reading is being taken with the test leads connected to the two plate caps of a horizontal output transformer the meter needle will swing to the red, SHORTED TURNS part of the scale. This merely indicates that the filament of the high voltage rectifier is good. The small "width" windings of horizontal output transformers will usually give an indication in the red, SHORTED TURNS region because the inductance of such windings is below the minimum that will give a GOOD reading. Any components connected across windings of a horizontal output transformer may cause a false SHORTED TURNS meter indication.

CHECKING DEFLECTION YOKES

1. Remove the TV set line cord plug from the power outlet.
2. Unsolder all of the leads to the deflection yoke.
3. Unsolder at least one lead of each balancing resistor or capacitor inside the yoke shell.
4. Check each winding separately for SHORTED TURNS and CONTINUITY.

The majority of deflection yoke horizontal windings are of a high enough inductance to give a GOOD indication when a SHORTED TURNS reading is taken, unless there are some shorted turns. However, some of the older deflection yoke vertical windings have an inductance of less than 3 mh. and may give a poor reading in the SHORTED TURNS test.

One of the best ways to check any flyback transformer or deflection yoke is to make comparison readings with the Flyback Checker of the part in question against a coil known to be good.

CIRCUIT DESCRIPTION

A 6S4-A tube is operated as a pulsed oscillator. The plate is connected to one end of transformer T-1. T-2 provides the positive feedback voltage from plate to grid. T-1 supplies the plate with a 60 cps AC voltage which causes the oscillator to be turned on and off with every cycle of the line voltage. The meter in the grid circuit reads the average grid current.

When the test leads are disconnected, the oscillator operates free running at about 200 cps. In the SHORTED TURNS test when the test leads are connected across a coil, (in the range between 3 millihenries and 2 henries) the frequency of oscillation increases, causing a larger grid current, which is indicated on the meter. If the coil has a shorted turn, or turns, this short circuit absorbs power and causes the amplitude of the oscillation to be decreased or reduced to zero. This is indicated on the meter by a low-reading. In the CONTINUITY test when the test leads are connected to a good coil, the meter is shunted, giving a GOOD indication.

SERVICE HINTS

If the unit does not operate properly, re-check all of the wiring carefully. Look for wires that are not soldered together but are accidentally touching.

Most difficulties are the result of incorrect wiring. Often it is helpful to have the wiring checked by someone else, preferably someone with radio, TV, or amateur radio experience.

If the tube does not light up, and the pilot light does light up, the tube filament may be open or the tube socket may have been wired incorrectly.

ALLIED'S SERVICE FACILITIES

If the kit does not operate properly, we recommend the following:

Please write our Kit Department giving stock number and date of purchase of the kit. Also, describe fully what appears to be wrong. Details as to which controls or sections of the circuit do not function properly will help us analyze the problem. We may be able to determine a wiring error or a defective part.

This wired KNIGHT kit may be returned for inspection within 1 year after purchase for a special service charge of $2.50. However, if the meter movement must be replaced because of burnout or other abuse, another $9.85* will be charged. Parts within the standard EIA 90-day warranty period will be replaced without charge for the parts. A charge will be made for parts damaged in construction or because of a wiring error, or for parts which are beyond the 90-day warranty period. After the one-year period, service charges are based on the length of time required to repair the unit, plus the cost of any parts required.

PLEASE NOTE: KITS WIRED WITH ACID CORE SOLDER OR ACID FLUX ARE NOT ELIGIBLE FOR REPAIR OR SERVICE AND WOULD HAVE TO BE RETURNED NOT REPAIRED AT YOUR EXPENSE.

Allied's service facilities are primarily for inspection and trouble shooting. Kits not completely wired, which require extensive work, will be returned collect with a letter of explanation.

If you return this kit, pack it well. To prevent

*Subject to change.

damage in shipment, use a large enough carton so that cushioning material can be placed around the instrument. Cushion it well and tightly. Mark it: FRAGILE—DELICATE ELECTRONIC INSTRUMENT. Send the kit prepaid and insured. We will return the repaired kit to you C.O.D. as soon as repairs are completed. If you wish to save C.O.D. fees, your advance remittance may be enclosed for standard repair charges plus transportation costs. Any excess remittance will be refunded.

We guarantee that the circuits on all KNIGHT kits have been carefully engineered and tested.

We guarantee that only high-quality components are supplied. All parts are covered by the standard EIA 90-day warranty. Any faulty components will be replaced prepaid and without charge if reported to us within the warranty period. We reserve the right to request the return of defective parts.

ALLIED'S GUARANTEE ON KNIGHT KITS

The designs and components selected for KNIGHT kits represent over a quarter of a century of experience in kit development. Allied extends these firm guarantees on KNIGHT kits:

If your kit was damaged in a parcel post shipment, please write us at once, describing the condition in which the shipment was received. If your kit was part of a Railway Express shipment that was damaged in transit, please notify the Railway Express agent at once and then write us.

The efficiently engineered KNIGHT kits are moderately priced. When you buy a KNIGHT kit you get the best in design, quality, and value. Recommend KNIGHT kits to your friends

PARTS LIST

Symbol No.	Description	Part No.
	CAPACITORS	
C-1	Paper .1 ufd, 400 V	245014
C-2	Ceramic disc .005 μfd, 600 V	297002
C-3	Ceramic disc .0022 μfd, 600 V	276227
C-4	Ceramic disc 470 μμfd, 600 V	276478
	INDICATORS	
I-1	Bulb, pilot light	640007
M-1	Meter, 400 ua includes mtg hardware	654206
	RESISTORS	
	When ordering resistors give part number and description.	
R-1	Carbon 47KΩ, ½ W	301473
R-2	CALIBRATION CONTROL 100KΩ	390104
	SWITCH	
S-1	Switch, 2P3T rotary	432124
	TRANSFORMERS	
T-1	Power transformer	101301
T-2	Oscillator transformer	103201
	TERMINAL STRIPS	
TS-1	1-terminal strip	440102
TS-2	2-terminal strip	440201
TS-3	2-terminal strip	440201
	TUBE	
V-1	6S4A tube	610039

MISCELLANEOUS PARTS

Description	Quantity	Part No.
Alligator clip	2	532005
Black pin jack—includes nut	1	502212
Cabinet	1	700043
Chassis	1	461320
Front panel	1	462229
Grommet, rubber, ¼"	2	830001
Grommet, rubber, ⅜"	2	830200
Grommet, rubber, ½"	1	830002
Instruction manual	1	750067
Insulator, red	1	880003
Insulator, black	1	880004
Knob	2	761004
Line cord	1	802001
Pin plug (red)	1	502111
Pin plug (black)	1	502112
9-pin tube socket	1	501090
Red pin jack—includes nut & washer	1	502211
Pilot light assembly	1	040011
Bracket	1	601721
Jewel	1	641002
Nut	1	579401
Handle assembly		
Handle	1	920001
Lockwasher, #10	2	582500
Nut, 10-32	2	570540
Stud	2	470025
	HARDWARE	
Lug, solder #8	2	553002
Lug, solder ⅜"	1	553001
Lockwasher ⅜"	1	582700
Nut, hex: 6-32 x ¼	7	570340
Nut, hex: ⅜-32 x ½	4	570840
Screw, 6-32 x ⅝"	7	560343
Screw, #6 x ½" self tap	2	562396
Screw, #4 x ¼" self tap	4	569292
	WIRE AND SOLDER	
Wire, 2" red	1	801002
Wire, 3" orange	2	801003
Wire, 4" yellow	3	801004
Wire, 5" green	1	801005
Wire, 6" blue	2	801006
Wire, 5" bare	1	806005
Test lead, 4' black	1	804019
Test lead, 4' red	1	804020
Solder, 20"	1	930020

TOOLS NEEDED FOR CONSTRUCTION

Allied Stock Number	Description	Price*
46N852	Soldering iron, pencil type	$5.16
50N132	Long-nose pliers, 6"	1.54
50N133	Diagonal cutter, 6"	1.34
45N796	Screwdriver, 6"	.71

***Subject to change**

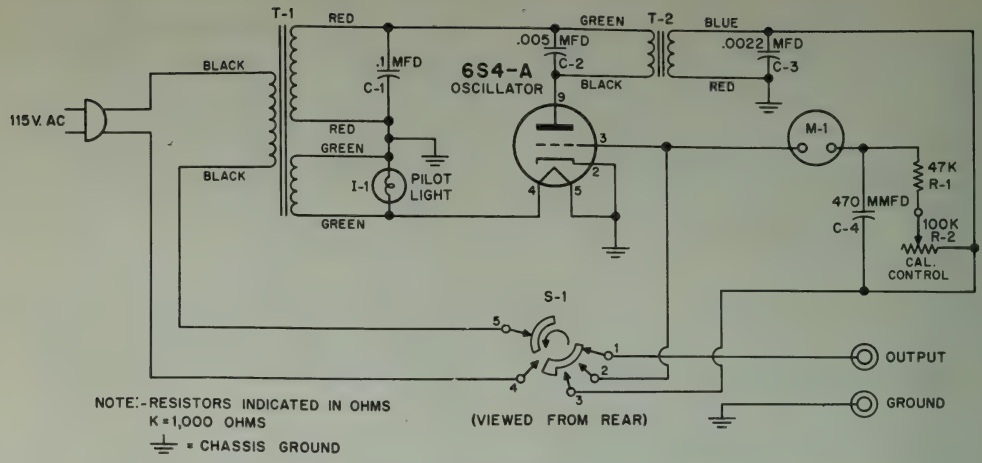


FIGURE 10. SCHEMATIC DIAGRAM

VOLTAGE CHART

TUBE	PIN								
	1	2	3	4	5	6	7	8	9
6S4A DC	0	0	—16	0	0	—16	0	0	0
AC	0	0	73	6.3	0	73	0	0	150

Voltages read with a VTVM from the pin indicated to chassis.

Switch in SHORTED TURNS position.

Instrument plugged into 115 V AC line.

CALIBRATE knob adjusted for meter needle on CALIBRATE.

Test leads removed from pin jacks.

RESISTANCE CHART

TUBE	PIN								
	1	2	3	4	5	6	7	8	9
6S4A	INF	0	70K	0	0	70K	INF	INF	250

Resistances read from pin indicated to chassis.

Instrument disconnected from power source.

Other conditions same as voltage readings.

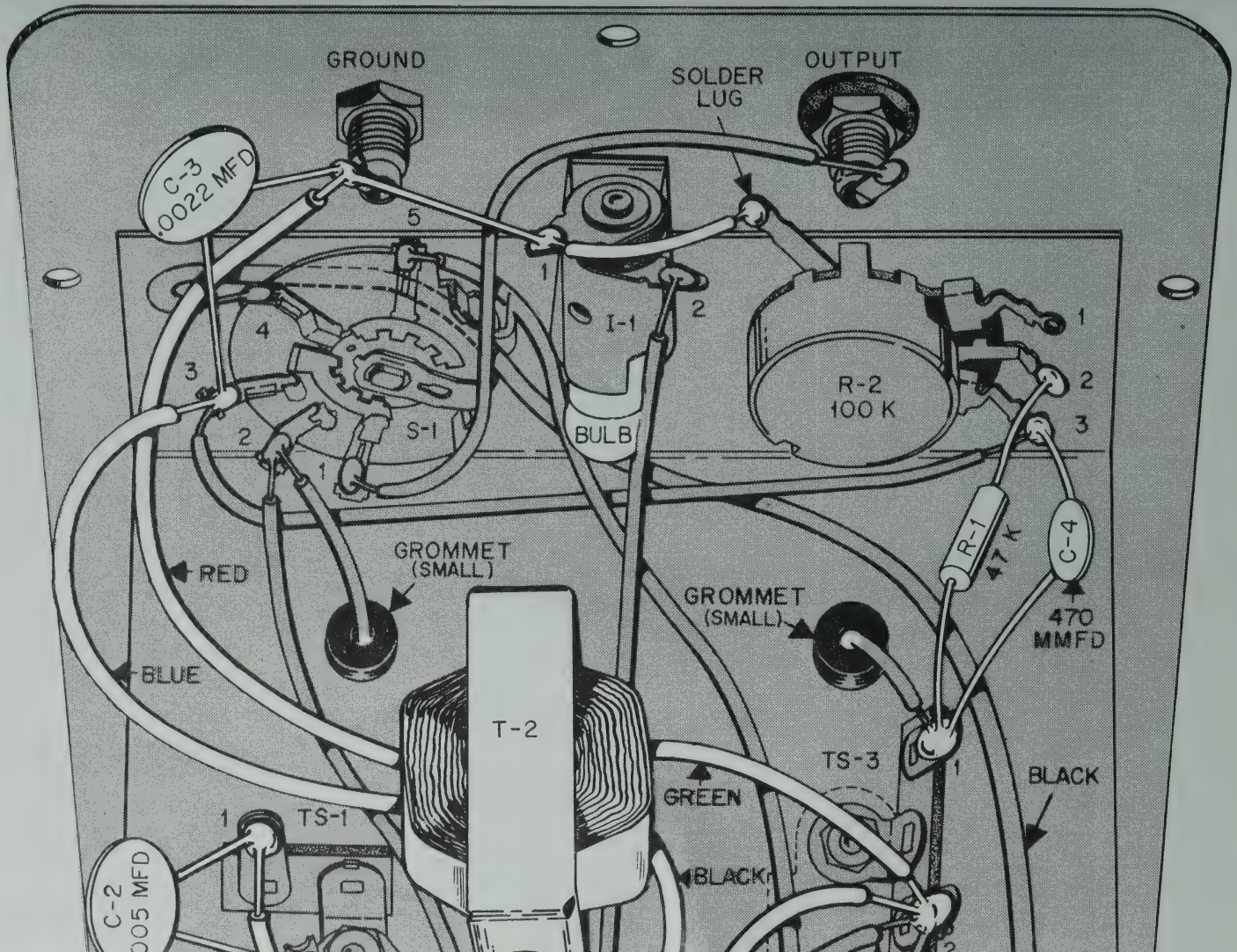
KNIGHT-KITS ARE YOUR BEST BUY THE FINEST ELECTRONIC EQUIPMENT IN KIT FORM. CREATIVE ENGINEERING AND USE OF PREMIUM QUALITY PARTS ASSURE SUPERIOR PERFORMANCE. THAT'S WHY KNIGHT-KITS ARE SOLD WITH THIS EXCLUSIVE GUARANTEE: *EVERY KNIGHT-KIT MUST MEET WITH YOUR COMPLETE SATISFACTION OR WE REFUND YOUR MONEY.*

KNIGHT-KITS ARE "CONVENIENCE ENGINEERED" RESISTORS ARE CARD MOUNTED AND IDENTIFIED. WIRE IS PRECUT. SMALL PARTS ARE PACKAGED IN SEE-THROUGH PLASTIC BAGS. DETAILS SUCH AS THESE AND STEP-BY-STEP INSTRUCTION MANUALS MAKE KNIGHT-KITS EASIEST TO BUILD.

KNIGHT-KITS ARE THE FIRST CHOICE OF EXACTING BUILDERS OF ELECTRONIC KITS EVERYWHERE AND HAVE BEEN SINCE THE EARLY 20's. THERE IS AN OUTSTANDING KNIGHT-KIT AVAILABLE FOR EVERY REQUIREMENT. EACH IS A REWARDING ADVENTURE IN KIT CONSTRUCTION. YOU WILL BE PROUD TO BUILD AND OWN A KNIGHT-KIT.

38K928-750260-12-AG-960

BOTTOM OF FRONT PANEL



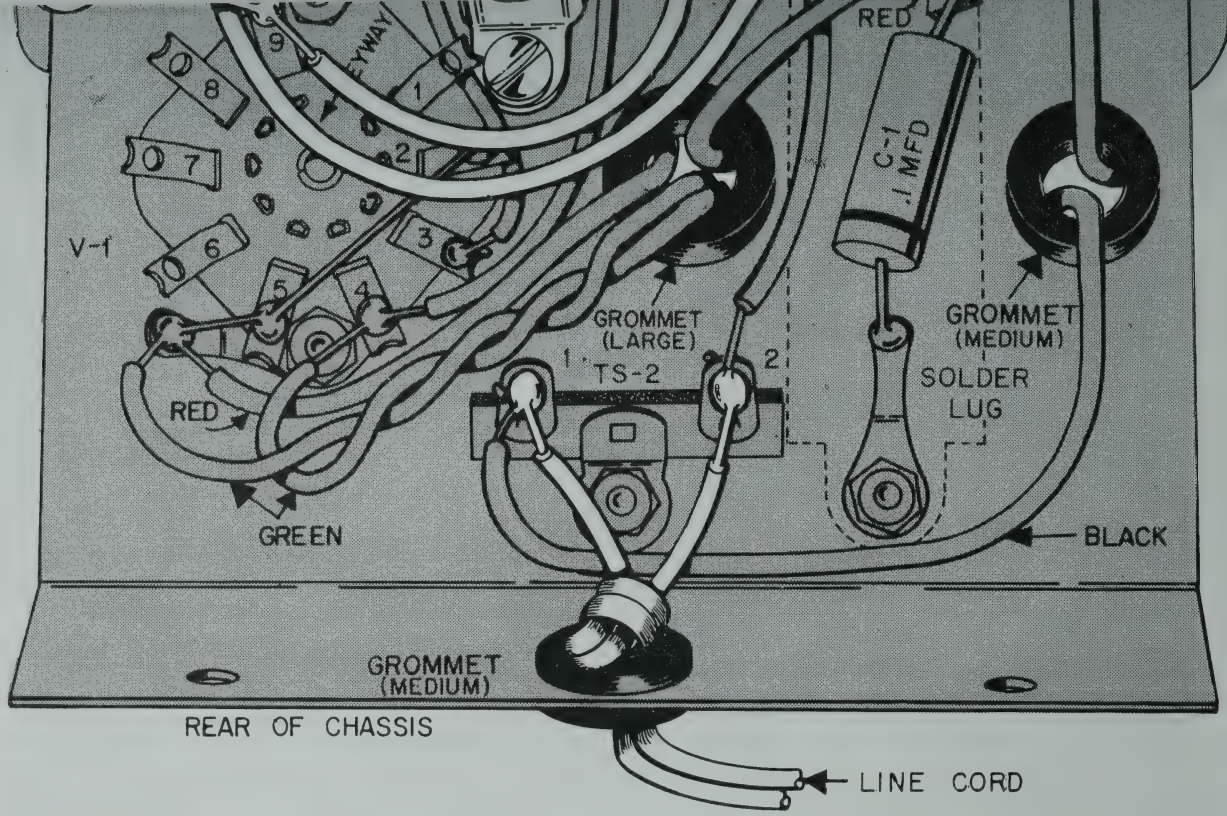


FIGURE 7. FINAL WIRING VIEW

'BACK CHECKER

RADIO
ATION
CHICAGO 80, ILL.

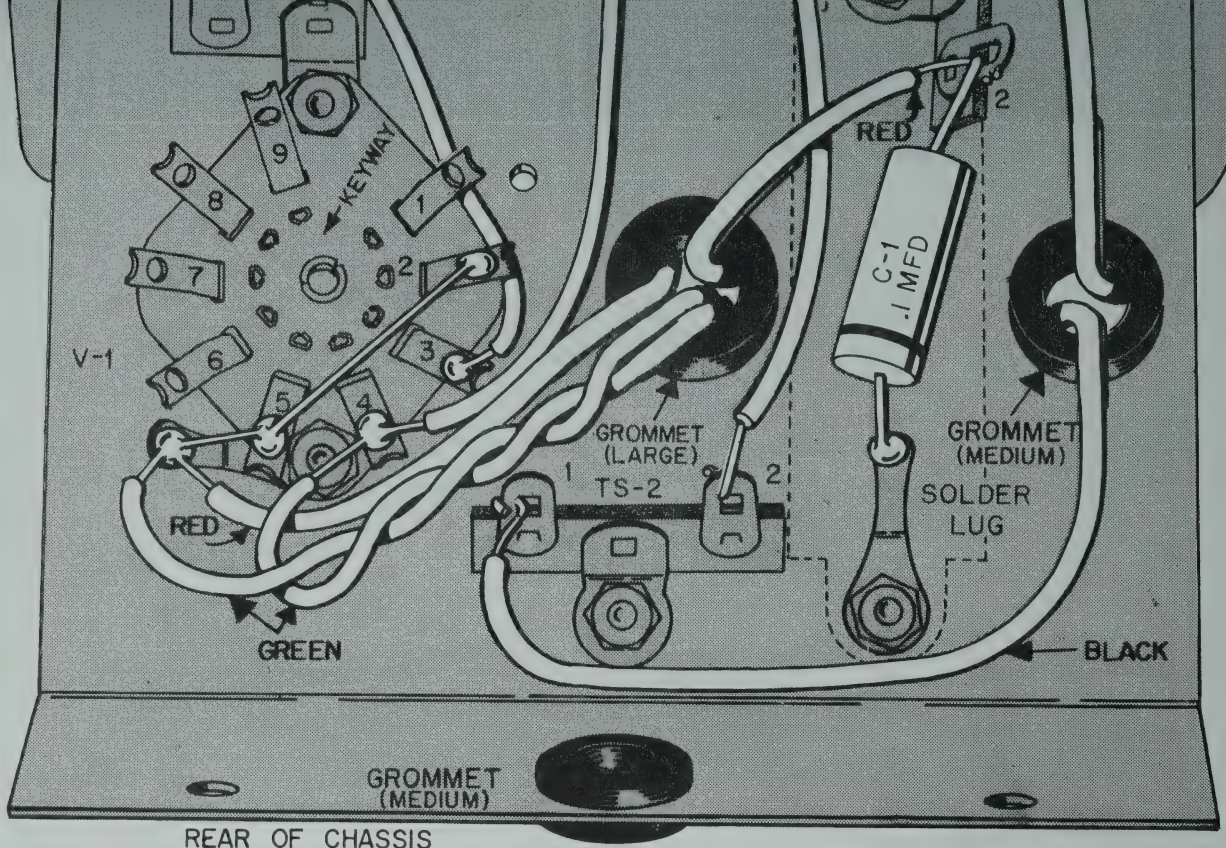
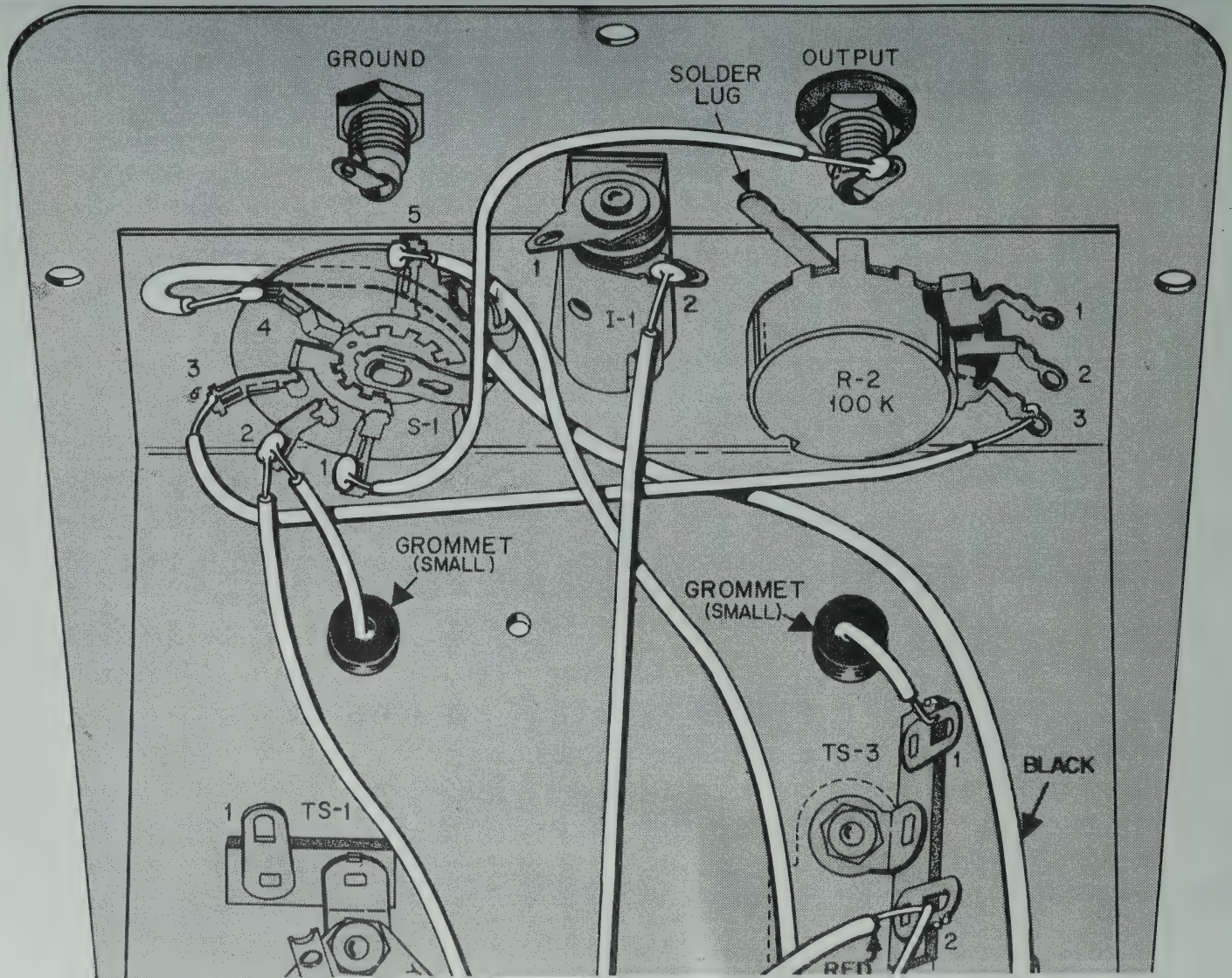


FIGURE 6. FIRST WIRING VIEW


GROUND
SOLDER LUG
OUTPUT
5
1
I-1
2
4
3
S-1
2
1
R-2
100 K
1
2
3
GROMMET (SMALL)
GROMMET (SMALL)
TS-3
1
BLACK
1
TS-1
2

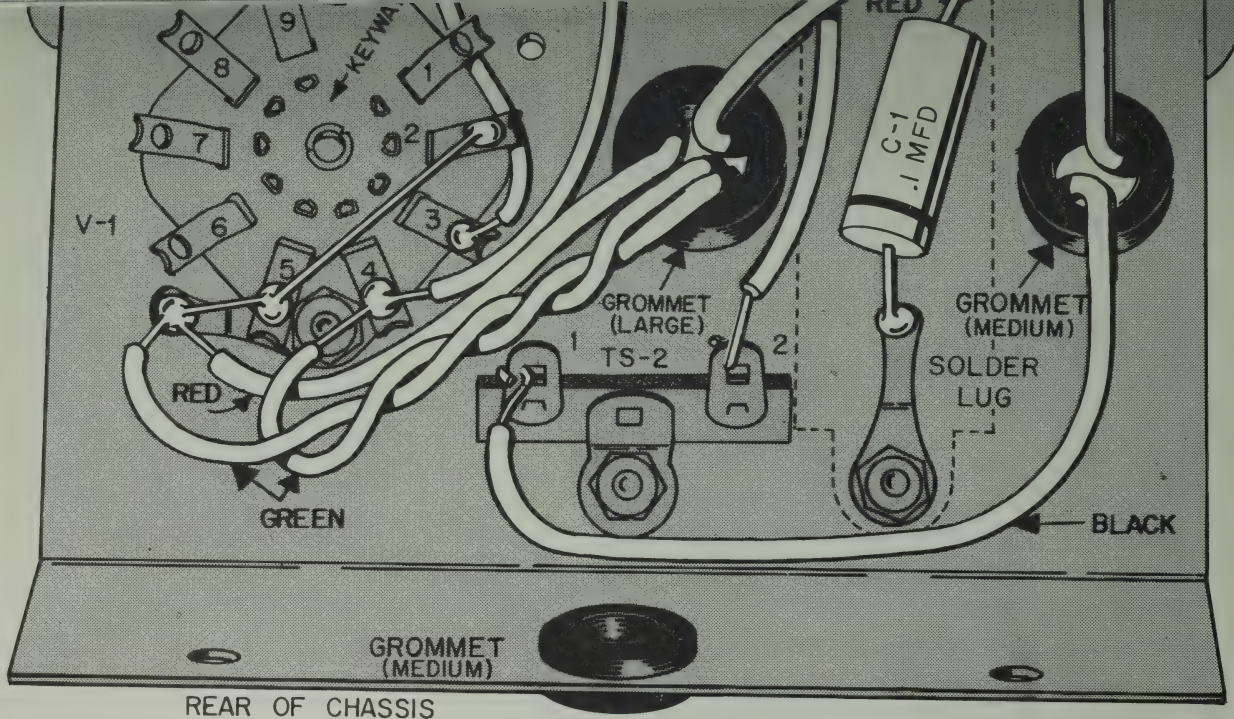
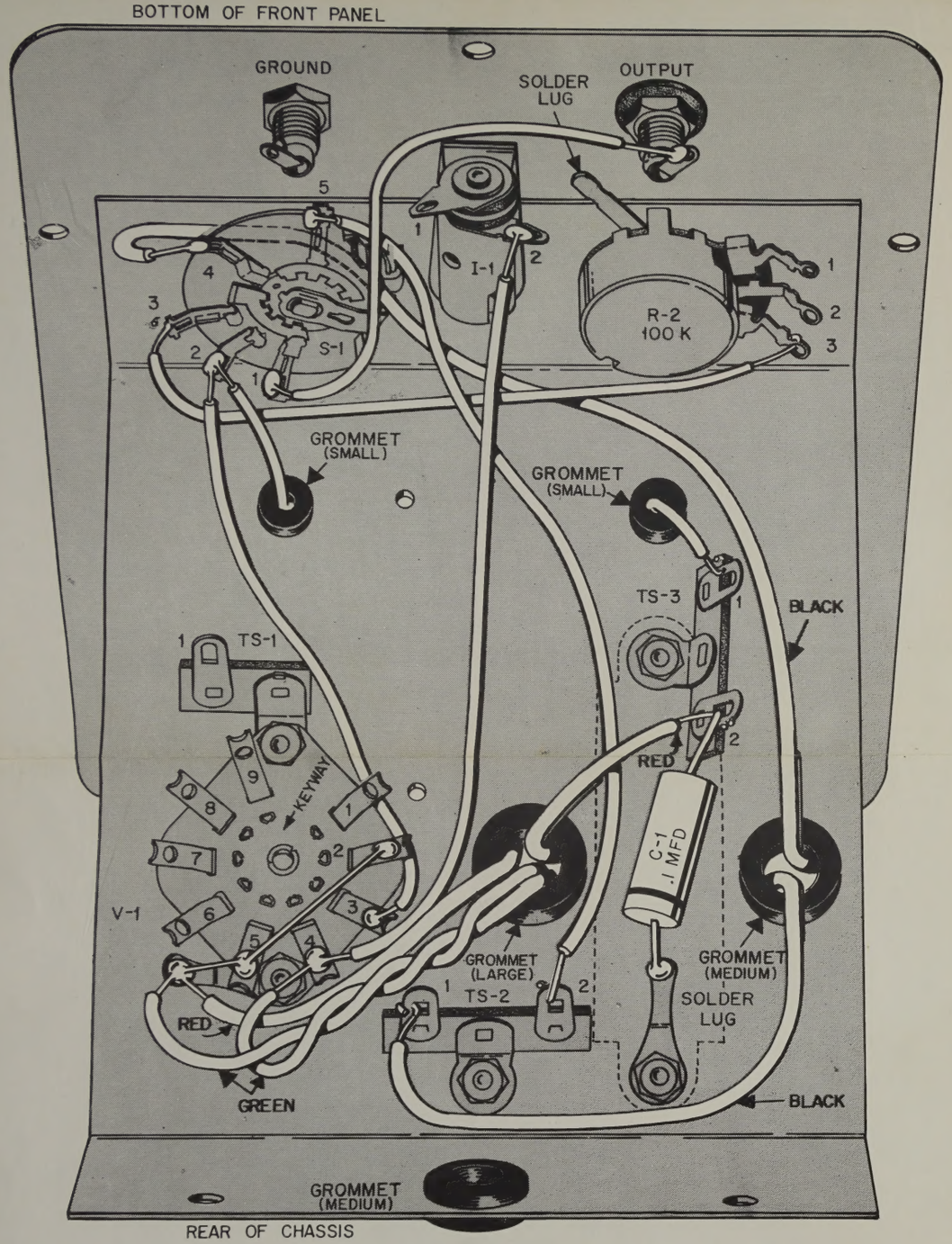


FIGURE 6. FIRST WIRING VIEW



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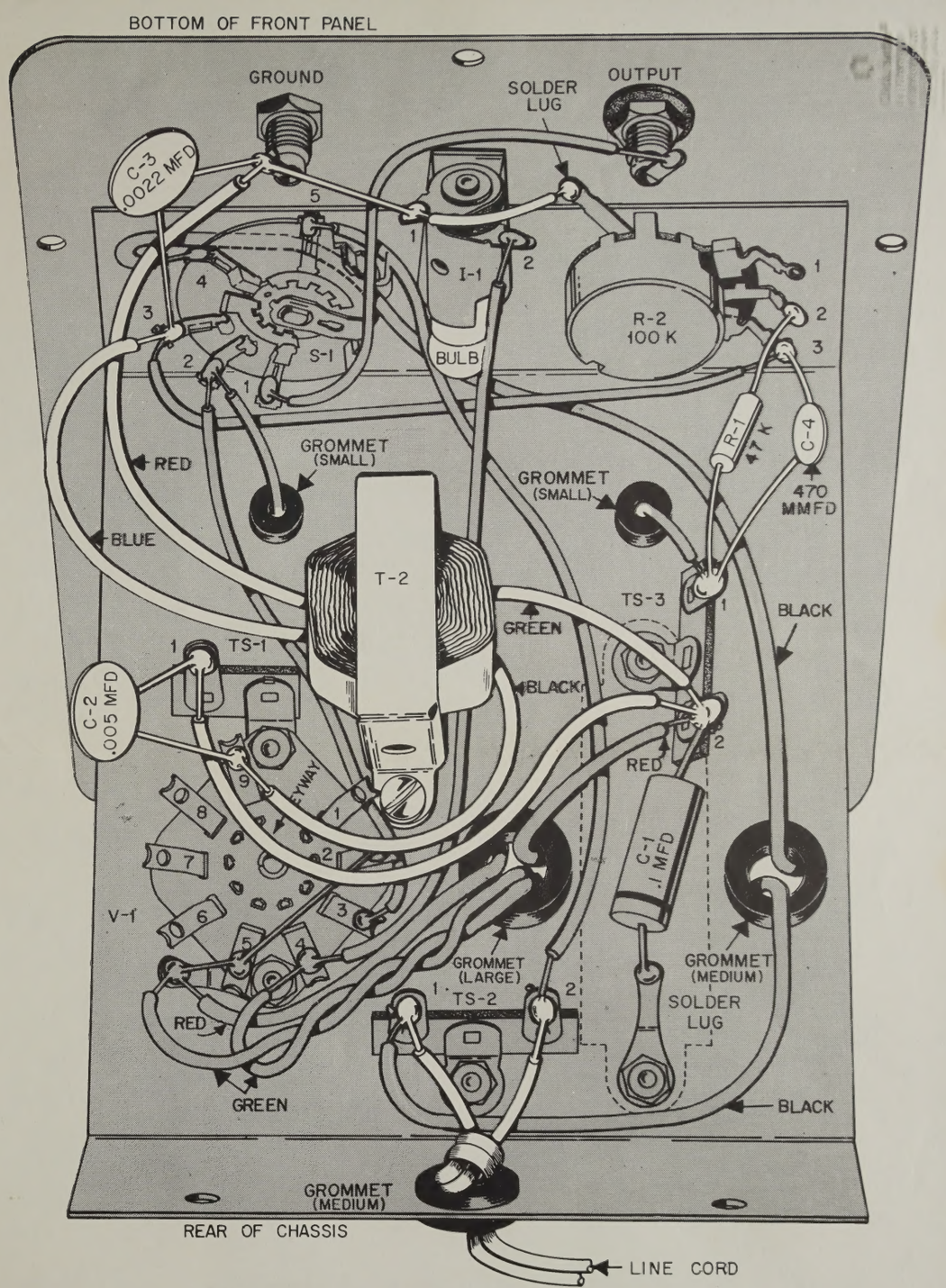

FIGURE 7. FINAL WIRING VIEW

THE knight-kit FLYBACK CHECKER

ALLIED RADIO
CORPORATION
100 N. WESTERN AVE. CHICAGO 80, ILL.

BOTTOM OF FRONT PANEL